

REMARKS

Reconsideration of this application is respectfully requested.

A petition for a two month extension of time to respond to the Official Action, mailed June 26, 2003, is being filed concurrently herewith.

For the reasons given on pages 2 and 3 of the Official Action, claims 5 and 6 are rejected under 35 USC 103(a) over the disclosure of the Pinto U.S. Patent No. 4,298,588 (hereinafter "US-A-4,298,588"), in view of the disclosure of the English Abstract of Russian 321045 (hereinafter "SU-A-321045").

This rejection is respectfully traversed.

The present claims are directed to a process for the production of ammonia in which a **fixed bed** of catalyst particles having a particle size within **three different** size ranges is used.

US-A-4,298,588 discloses the conversion of an ammonia synthesis gas in a **fixed** catalyst bed. The bed is loaded with ammonia catalyst particles having a size ranging from 1 to 4.7 mm, preferably 2 to 4 mm (column 5, lines 43-45).

Contrary to US-A-4,298,588, the presently claimed invention employs a fixed bed with a **mixture** of catalyst particles having a particle size within **three different** size ranges to obtain a maximum bulk density and thus an improved catalytic activity per reactor volume (see the last paragraph on page 1 of the present specification).

US-A-4,298,588 neither discloses nor suggests a fixed catalyst bed composed of a

mixture of catalyst particles with three different ranges of particle size.

SU-A-321045 discloses a fluidized bed of catalyst particles. According to this publication the small particles (0.5 to 1.0 mm) move in spaces between the stationary coarse (larger) particles. This publication is completely silent with respect to the size or the volumetric representation of the coarse particles. SU-A-321045 does not give any hints to increase the bulk density of the catalyst particles in order to obtain an improved product yield. Moreover, SU-A-321045 in no way suggests that the bulk density of the catalyst placed in a fixed bed should be increased when intending to improve the ammonia product yield.

US-A-4,298,588 relates to fixed bed technology whereas SU-A-321045 relates to a quite different technology, i.e. to fluidized bed processes. According to the latter reference, the catalyst particles are fluidized, and the use of such catalyst particles in fixed bed reactors would not be obvious for a skilled worker. In other words, there was no motivation for a skilled person to combine the teachings of US-A-4,298,588 and SU-A-321045 in order to arrive at the present invention.

In summary, the present invention relates to improved ammonia production in a fixed bed of ammonia catalyst composed of catalyst particles with different size ranges.

None of the references teaches or suggests the use of the claimed catalyst beds. US-A-4,298,588 relates to a fixed catalyst bed of catalyst particles having a size within a single determined range, and SU-A-321045 relates to a fluidized bed technology which

substantially differs from fixed bed technology.

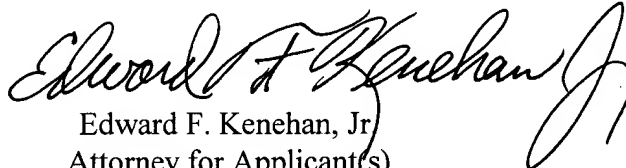
Accordingly, the rejection under 35 USC 103 should be withdrawn.

Allowance is requested.

In the event that this paper is not timely filed, Applicant respectfully petition for an appropriate extension of time. The fees for such an extension or any other fees that may be due with respect to this paper may be charged to Deposit Account No. 50-2866.

Respectfully submitted,

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